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RESEARCH MEMORANDUM

RECRUITING RESOURCES AND POLICIES

Timothy W. Cooke

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1. The Center for Naval Analyses (CNA) was asked to examine how Commander, Navy Recruiting Command (CNRC) could increase the return on investment in enlisted recruiters. The study results are described in enclosure (1).

2. CNRC's geographic allocation policies affecting recruiting incentives, objectives, and production are studied in detail. The analysis uses aggregate data on recent recruiting performance and recruiting markets in each of the 41 Navy Recruiting Districts. Several suggestions for improving the efficiency and equity of recruiter allocation and evaluation are offered.


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RECRUITING RESOURCES AND POLICIES

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ABSTRACT

How can Commander, Navy Recruiting Command, manage enlisted recruiters more cost effectively to provide the needed quantity and quality of recruits? The Recruiting Resources and Policies Study addressed this question by examining geographic variation in enlistment goals, recruit production, and recruiter incentives. This research memorandum summarizes the study and highlights the major policy implications.

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INTRODUCTION

Managing Navy recruiting activities in an all-volunteer environment involves making decisions on several levels about resource allocations. The total expenditures for recruiting enlisted personnel must be managed so that enough qualified recruits are accessed into Navy training and general duty programs. If not enough is invested in recruiting resources, the Navy may face future manpower shortages in important skill areas, with associated reductions in readiness.

Fluctuations in civilian labor market opportunities affect enlistment propensities of young men (who are the primary focus of Navy recruiting), and there is a temptation to implement cost-saving reductions when recruiting conditions are relatively favorable. Trying to cut costs in good times can backfire, however, if recruiting conditions change and resources then are no longer at an appropriate level.

Allocating a given level of recruiting expenditures between different recruiting resources also contributes to the success or failure of the overall recruiting effort. For example, tradeoffs are implicitly made between transportation and advertising budgets. Recruiters require transportation to make contact with and screen potential recruits, and smaller expenditures on transportation would reduce recruiter travel and productivity. However, shifting these dollars to advertising may enhance the enlistment propensity of potential recruits and increase recruiter productivity, potentially offsetting the effects of reduced travel. Allocating recruiting assets cost effectively between alternative activities can be difficult. Analysis of these tradeoffs is complicated by a host of institutional and political constraints. Some of the issues have been addressed in other research [1, 2].

Still another consideration is how to make allocation decisions involving each of the major recruiting inputs separately. Management of enlisted recruiters, the most important recruiting resource, is the subject of the Recruiting Resources and Policies study. Many topics involving recruiter management could be addressed within the scope of the study, but this research memorandum concentrates on the geographic allocation policies, which are among the most important made by Commander, Navy Recruiting Command's (CNRC's), Plans and Policies department. The following specific issues are addressed:

- Allocation of recruiters to recruiting districts
- Allocation of recruiting objectives to recruiting districts
- Evaluation of recruiting district performance
- Evaluation of individual recruiter performance.

This research memorandum analyzes these issues and discusses how enlisted recruiters may be managed more cost effectively.

BACKGROUND

THE RECENT ENVIRONMENT FOR NAVY RECRUITING

Since 1982, Navy enlisted recruiters have produced higher quality accessions than ever before. The unprecedented concentration of high-aptitude high-school-diploma graduates (HSDGs) was associated with a relative improvement in military compensation, a decline in civilian employment opportunities, and a reduction in accession requirements in 1982 and 1983. Beginning in 1984, however, rapidly improving civilian employment opportunities increased the difficulty of recruiting highly qualified young men. Table 1 presents measures of unemployment and relative military pay.

Table 1. Labor market indicators for male youth

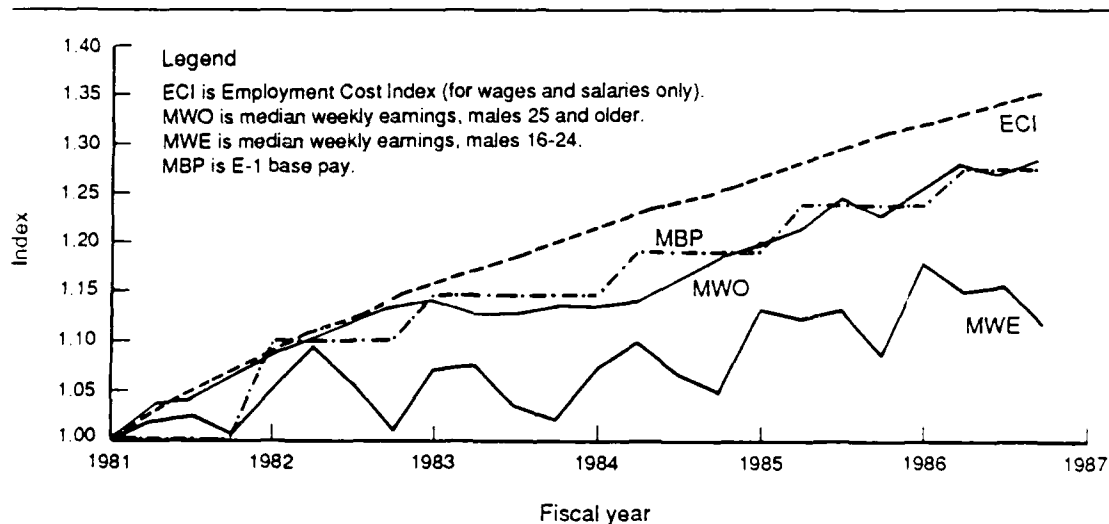
Year	Unemployment rate (16-19)	Median weekly earnings (16-24) (dollars)	Monthly basic pay (E-1) (dollars)	Relative military pay index ^a
1979	15.9	196	419	1.00
1980	18.3	208	449	1.01
1981	20.1	218	501	1.08
1982	24.4	224	551	1.15
1983	23.3	223	574	1.20
1984	19.6	231	596	1.21
1985	19.5	240	620 ^b	1.21
1986	19.0	246	639 ^b	1.22

SOURCES: *Economic Report of the President; 1987, Employment and Earnings, Uniformed Services Almanac.*

- a. The relative military pay index is the ratio of monthly basic pay to median weekly earnings, normalized so that the index is equal to 1.00 in 1979.
- b. Monthly basic pay for E-1 personnel in 1985 and 1986 depends on length of service. The rates given are for those with more than four months' service. The rates for those with less service are \$574 and \$591 in 1985 and 1986, respectively.

The youth unemployment rate dropped nearly 4 points in 1984, making recruiting more difficult for all the services. An ameliorating influence was the 6-percent fall since 1982 in civilian median weekly earnings relative to military pay. Figure 1 illustrates changes in other measures of civilian earnings and military base pay since 1981. The ECI series in the figure is the age and salary component of the Employment Cost Index based on a survey of 2,000 establishments (non-Federal employers) published by the Bureau of Labor Statistics (BLS)

of the U.S. Department of Labor. The ECI is the index used by the Department of Defense to evaluate trends in relative military pay. It has grown faster since 1981 than either of the other two measures of civilian earnings, and faster than military basic pay. The MWO and MWE curve indexes are median weekly earnings of full-time employed males age 25 or older, and 16 to 24, respectively, as determined from household survey data published by BLS. Older men have done much better than younger men since 1981, with older men reporting earnings increases similar to those of military basic pay. This relative earnings decline for younger men occurred in spite of the decreasing size of the youth cohort—this decrease had been expected to precipitate a relative increase in their wages. Because the military almost exclusively recruits only entry-level personnel, the MWE index is the most appropriate measure of civilian earnings potential of the population of potential recruits. Higher military pay relative to the median weekly earnings of young men may have been responsible, in part, for continuing high recruit quality as civilian employment prospects improved.



SOURCE: CNA

Figure 1. Indices of pay comparability, FY 1981-FY 1986

Navy recruiters have had to face a new challenge in their recruiting efforts—a change in the service preferences of young males. The Defense Manpower Data Center (DMDC) annually surveys the service preferences of young men [3], and as shown in figure 2, it found that the Navy fell from a strong second among service preferences in 1978 to last in 1986. Youth perceptions of the Navy relative to the other services in 1986 are reflected in other ways in table 2. The relatively unfavorable image reflected in table 2, and the singularly poor recognition of Navy's advertising slogan, reinforce the conclusion that Navy enlisted recruiting has been getting more difficult relative to the other services.

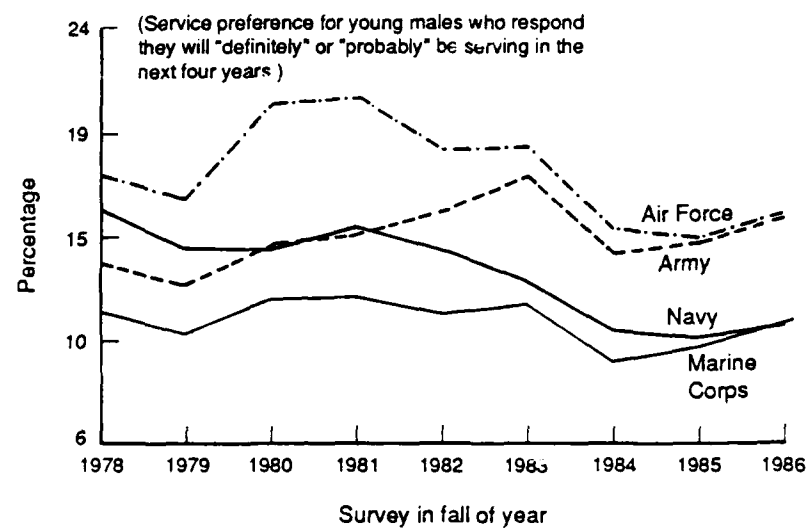


Figure 2. Results of youth attitude tracking survey

Table 2. Male youth perceptions of the services

Image statement	Percent mentioning service first			
	Navy	Army	Marine Corps	Air Force
Teaches valuable skills and trades	17	35	13	29
Working in a high technology environment	15	12	7	61
Opportunities for promotion and advancement	14	35	14	28
Defending your country	6	43	34	11
Extended duty away from family	45	20	18	9
Recognition rate for service advertising slogans	38	82	84	89

SOURCE: Defense Manpower Data Center, Youth Attitude Tracking Survey (fall 1986, 5,382 respondents).

DIMENSIONS OF RECRUIT QUALITY

Four broad categories of recruit quality are created by crossing two mental group categories with HSDG status. The Armed Forces Qualification Test (AFQT) percentile score is used to determine the mental group category of each recruit. Upper-mental-group (UMG) recruits score at or above the 50th percentile on the AFQT. Lower-mental-group (LMG) recruits score below the 50th percentile and are divided into MG3L (percentiles 31 to 49) and MG4 (percentiles 10 to 30). MG5 (percentiles 1 to 9) individuals are not recruited. High-aptitude HSDG recruits are more valuable to the Navy than other recruits. This is especially evident in statistics of early attrition. Recruits without regular high school diplomas, including those with General Equivalency Diplomas (GEDs), leave prior to the end of obligated service at nearly twice the rate of HSDG recruits [4 and 5]. Recruiting objectives and incentives explicitly recognize this fact by encouraging recruiters to enlist HSDG recruits. The matrix of recruit quality is illustrated in table 3, which defines the six recruit quality categories used by Navy manpower planners. The numbers in the table are FY 1987 objectives in terms of maximum or minimum percentage of each type.

Table 3. Matrix of recruit quality and recruiting objectives

Mental category	Education certificate		
	HSDG ^a	NHSDG/GED ^a	Total
1-3A	A-cell (47 min.)	B-cell (10 max.)	57% min.
3B	CU-cell (31 max.)	DU-cell (0)	43% max.
4	CL-cell (12 max.)	DL-cell (0)	
	90 min.	10 max.	100%

a. Percentages of recruiting objectives in each category are in parentheses.

For comparison, recent aggregate recruiting performance by recruit type is presented in table 4. It is interesting to note that only FY 1983 and FY 1984 recruiting performances meet the FY 1987 quality objectives. Relative to 1983, recruiters in 1984 substituted CL-cell recruits for A-cell recruits, allowing the HSDG percentage to remain high. These two types of recruits have similar propensities to complete a term of enlistment. However, in 1985, recruiters substituted B-cell recruits for CL-cell recruits. B-cell recruits are much less likely than CL-cell recruits to

be successful in the Navy [4 and 5]. The roughly 3,000 D-cell recruits of 1986 are even less likely to be successful sailors. Though FY 1987 objectives for recruit quality and quantity have been met, a reduction in recruiters of about 276 man-years is expected in FY 1988. With larger accession goals expected in FY 1989, cost-effective management techniques for improving recruiter productivity take on even greater importance.

Table 4. Quality of active duty non-prior-service male contract, FY 1981-FY 1986 (percent by recruit type)

Year	A	B	CU	CL	DU	HSDG	UMG
1981	41	14	19	14	12	74	55
1982	46	11	22	12	9	80	57
1983	57	6	28	8	1	93	63
1984	50	6	29	13	2	91	56
1985	49	14	27	9	1	85	63
1986	48	12	27	10	3	85	60
Average	48	11	25	11	5	84	59

CHANGES IN THE NUMBER OF NAVY ENLISTED RECRUITERS

Navy enlisted recruiters are categorized by function for analysis purposes. Recruiters whose primary job is to enlist new recruits made up 77 percent of the total number of recruiters between FY 1984 and 1986. These persons are called production recruiters. Supervisory recruiters, who generally manage the activities of the production recruiting force may also participate in prospecting for, and enlisting, new recruits. Supervisory recruiters made up about 14 percent of all recruiters during the same three-year period. These proportions vary substantially across districts as a result of differences in local management and circumstances. A small number of other recruiters, about 9 percent, have more specialized duties involving, for example, community relations and oversight of the Delayed Entry Program (DEP). These recruiters do not enlist new recruits.

Table 5 presents the number and quality composition of enlistment contracts since 1981, along with the number of production recruiters and the size of the Delayed Entry Program—the cache from which most enlistments enter the Navy. In FY 1984, CNRC relinquished 14 percent of enlisted production recruiters as a result of recruiting success in 1983. About one-third of this reduction was offset by increasing supervisory recruiters. (An interesting issue not addressed in this study is the appropriate mix of supervisory and production recruiters.) The ratio of production to supervisory recruiters fell from about 12:1 in 1981 to about 5:1 in 1986. To the extent that this shift in the employment of recruiters between categories was associated with changes in the

allocation of effort between recruit prospecting and administration, average production per recruiter (including both types) may have been expected to fall. Potentially offsetting this effect are gains in efficiency associated with better management of production recruiters.

Table 5. Changes in active duty non-prior-service male contracts and the number of production recruiters

FY	Number	Contracts		Average number of production recruiters	End of FY DEP
		Percent HSDG	Percent UMG		
1981	73,271	74	55	3,232	18,080
1982	76,735	80	57	3,086	30,972
1983	66,830	93	63	3,057	34,395
1984	63,109	91	56	2,616	29,423
1985	65,943	85	64	2,775	24,074
1986	78,746	85	60	3,117	23,785

Fewer recruiters in 1984 and 1985 relative to 1983 led to a decline in the number and quality of recruits, as the recruiting environment worsened and accession requirements increased. About 500 additional production recruiter man-years were available in FY 1986 relative to FY 1984, and the growth of the recruiting force continued into FY 1987 (about 500 additional production recruiter man-years in FY 1987).

The management challenge is to employ these recruiters as efficiently as possible. If there are significant and systematic differences in recruiting performance by region, then the productivity of the enlisted recruiting force can be improved by geographic reallocation of recruiters and enlistment objectives. Introducing geographic variation in recruiter incentives would complement such geographic shifts of recruiting effort.

GEOGRAPHIC VARIATION IN RECRUITING OBJECTIVES

Determining recruiting objectives by region is one of the major planning functions of CNRC. Recruiting objectives serve three distinct functions: (1) they provide information and facilitate communication concerning expected production in each area, (2) they provide incentives for field recruiters to attain the objectives, and (3) they provide benchmarks for evaluating the performance of recruiters in different areas. Because civilian labor market opportunities affect the productivity of recruiters in different places, recruiter production should be expected to vary with the relative difficulty of the local recruiting market. A system of allocating objectives that accounts for these expected differences in recruiting success for a given level of effort is perceived to be fair. Fairness in the allocation of objectives takes on even greater significance when actual performance relative to the objective is used to evaluate and reward recruiters.

MARKET SHARE GOAL ALLOCATION

The current method for assigning recruiting objectives is based on "fair sharing" the desired number of enlistments between the geographic areas. The total number of enlistment contracts desired nationwide is determined by the number of accessions required and the desired size of the DEP. The "fair" share of this total assigned to each area is determined by an analysis of the relationship between district production and indicators of recruiting market difficulty. Table 6 presents market shares by recruiting area for non-prior-service active duty recruits from FY 1982 through FY 1986. The recruiting areas are illustrated in figure 3. The most important characteristic of these market shares is their relative stability from FY 1982 through FY 1985. In FY 1986, however, there was a significant redistribution of enlistment objectives to areas 5 and 7 and away from areas 1 and 4. Whether or not the shift of market shares is consistent with observed differences in recruiting markets is addressed below.

Table 6. Market shares for non-prior-service active duty enlistment contracts by area: FY 1982-FY 1986

FY	Area						Total
	1	3	4	5	7	8	
1982	20.6	16.8	20.6	13.7	11.7	16.6	100.0
1983	19.9	17.6	19.0	13.7	13.0	16.8	100.0
1984	19.5	17.4	20.8	13.9	11.4	17.0	100.0
1985	19.7	17.4	20.3	13.9	12.3	16.4	100.0
1986	16.4	17.8	17.1	17.5	14.7	16.5	100.0
Average	19.2	17.4	19.6	14.5	12.6	16.7	100.0

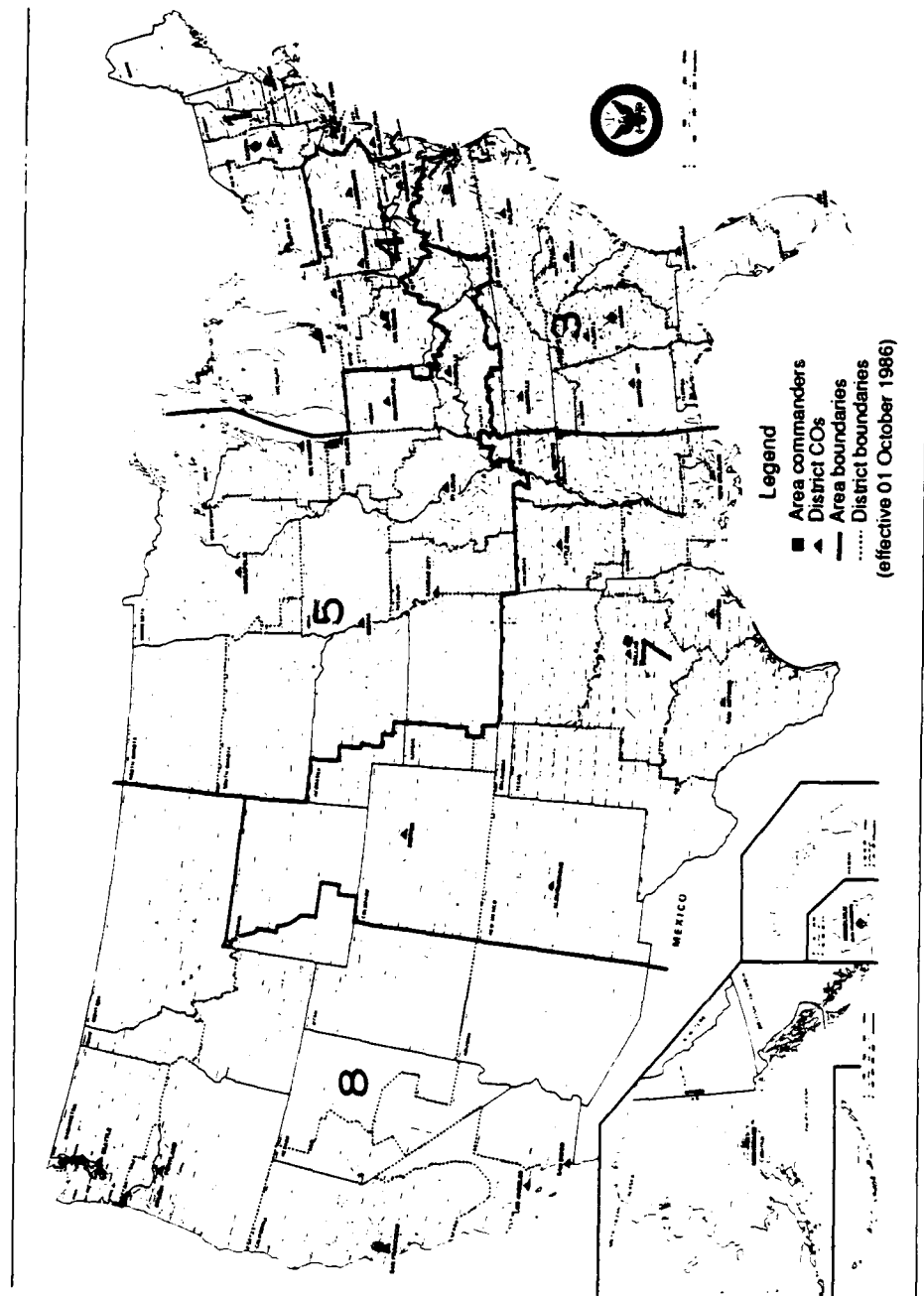


Figure 3. Navy recruiting areas and districts

These market shares are based on a regression analysis of pooled cross-section time-series variation in recruiting performance and indicators of civilian labor market conditions. The indicators of recruiting potential include youth population, the unemployment rate, the number of recruiters, percent of the population that is urban or minority, and a measure of relative military pay. Past performance is measured by observed production of A-cell and CU-cell recruits across the 41 recruiting districts since FY 1981. Forecasts of the explanatory variables are then used to predict enlistment contracts by district. These predictions are summed, and each district's proportion of the total is calculated to be its market share, i.e., contract goal. The district shares are summed to obtain the area shares in table 6. The procedure is perceived to be fair in principle, if difficult to implement.

EVALUATING GOAL ALLOCATION

One definition of a fair allocation of recruiting objectives is to have districts in similar circumstances receive similar goals, i.e., equal treatment of equals. In [6], a linear programming technique called Data Envelopment Analysis (DEA) is used to gauge the consistency of district goals in this sense. Districts with observable recruiting market indicators that are similar to those of other districts, but with objectives that are smaller, are identified by this technique.

The recruiting market indicators used to gauge the similarity between districts are similar to those used in the goaling process at CNRC, and most of the data were obtained from CNRC. Data include the number of recruiters, a measure of youth population, the unemployment rate, the percent of the population that is urban, and a measure of relative military pay.

Observed contract objectives by district and year are related to these measures of recruiting conditions. Table 7 shows the resulting pattern of districts identified as having contract objectives smaller than similar districts elsewhere. There is a substantial decline, from 22 to 9, in the incidence of such occurrences between FY 1982 and FY 1985. Area 7 has the smallest proportion of inconsistent goals over the four years. More than two-thirds of the district objectives in area 1 are lower than expected. Though no estimates were made for FY 1986, the shift of market share out of area 1 in that year may have accentuated this pattern.

The total estimated difference between maximum and actual contract objectives for the nine districts with relatively low goals in FY 1985 is only about 1,000 contracts. This demonstrates a strong similarity between the goaling procedure implemented recently at CNRC and the DEA described in [6].

EVALUATING DISTRICT PERFORMANCE

CNRC evaluates recruiting districts primarily on achievement of quality and quantity objectives for new entrants. It is not always clear, however, whether district potential has been accurately evaluated by the market share process. The analysis in [6] gauges district performance relative to other districts in similar circumstances. District evaluation can be improved

when performance measures are compared with goal attainment. Districts whose performance is not as good as similar districts but which have attained their objectives are candidates for higher goals. On the other hand, districts that produce at least as many contracts as other similar districts but do not attain their objectives are candidates for goal reductions.

Table 7. Number of observations with inconsistent contract objectives by year and area

Area (number of districts)	1982	1983	1984	1985
1 (6)	5	5	5	4
3 (8)	5	2	3	2
4 (6)	5	4	3	1
5 (8)	3	4	2	0
7 (8)	1	2	3	0
8 (5)	<u>3</u>	<u>0</u>	<u>1</u>	<u>2</u>
Total	22	17	17	9

In [6], the DEA technique applied to the evaluation of goal consistency across districts was also applied to district performance. This technique was supplemented by an alternative statistical procedure also designed to evaluate district production potential. Both methods allow comparison of actual district performance to estimated district potential. The methods yielded substantial agreement about which districts were performing well (given labor market conditions), but on average, the DEA approach gave higher potential production estimates for the inefficient districts than the statistical approach.

When goal attainment is combined with the performance measures for FY 1982 through FY 1985, the largest category of districts are those that are both efficient and attain their goals. These districts performed as well as other similar districts, and as well as expected. In FYs 1984 and 1985, the next largest group of districts did not achieve their goals but performed as well as

districts in similar circumstances. In FYs 1982 and 1983, a large number of districts (nearly 40 percent) attained their goals but did not perform as well as similar districts. By contrast, in FYs 1984 and 1985, about half of the districts did not attain contract goals, with the majority of these being as productive as similar districts (including those which attained their goals). Districts that neither attained their goals nor performed as well as similar districts may require closer scrutiny. If some districts persistently fall in this category, revision of the market share procedure may be indicated after management and market data are first eliminated as significant causal factors.

POTENTIAL IMPROVEMENTS OF MARKET SHARE GOAL ALLOCATION

The generally positive evaluation of the fairness of goal allocations obtained in [6] is limited by the analytical technique and quality of the regional labor market indicators. First, the linear programming technique used in the analysis withholds judgment on goals assigned to districts that are dissimilar to other districts or that are not dominated by similar districts. The technique cannot be used to evaluate whether such districts should have been assigned larger objectives. For this reason, the technique will tend to overstate the degree of consistency between the district objectives.

Second, the specification of recruiting conditions is to some degree incorrect and incomplete. The evidence for this is strongest for districts in area 1 (the northeast). There is no reason to believe that average recruiter ability and effort in area 1 are less than that in other areas. Yet, recruiters in area 1 have generally had lower objectives (and been less productive) than other recruiters, even after accounting for such things as lower unemployment rates in the area. This is not just a Navy phenomenon; all the other services have reported lower recruiter productivity in the northeast in recent years. Some unquantified aspects of the civilian labor market have recently made recruiting in area 1 more difficult than elsewhere.

There are several ready candidates for misspecification of civilian labor market opportunities of young men. The relative military pay index used in [6] in the evaluation of goal allocation is based on changes over time in the Employment Cost Index (ECI) that were later shown to overstate the civilian earning opportunities of young men. The geographic variation in this variable is also suspect, as it is based on data from the 1970s. The data required to improve the specification of relative military pay is not available. Pending CNA research is expected to develop cross-section, time-series variation in the civilian earnings of young men. Second, it is likely that geographic variation in unemployment rates for all men older than 16 are closely correlated with male youth unemployment. However, differences in the industrial composition of employment between areas may lead some areas to be net exporters of youth labor and others to be net importers. Areas that tend to export youth labor are probably better recruiting markets than areas that typically import youth labor, other things being equal. In particular, variation in youth or overall unemployment rates may not capture the variation in local employment opportunities of a relatively mobile work force.

Finally, the regression analysis used by CNRC planners for determining market shares is based on pooled time-series, cross-section observations of recruiting district performance during different sets of years. FY 1979 observations appear to be among the earliest used. The method may produce inertia in the goals, with declining areas being "overgoaled" and improving areas being "undergoaled." The problem of inertia in the goals is more severe the lower the proportion of explained variation in performance and the more important are any omitted variables. In this vein, two alternatives that may improve the market share analysis are to (1) reduce the observation period and assign market share on the basis of recent cross-section variation, or (2) use all observations and employ a technique, such as seemingly unrelated regression (SUR), that allows for district- and time-specific effects as well as varying coefficients for explanatory variables. CNRC planners are evaluating the specification of the market share regression analysis.

GEOGRAPHIC VARIATION IN RECRUITING INCENTIVES

Two different incentive mechanisms are employed by CNRC to enhance efficiency in the allocation of contract objectives. For the individual recruiter, the "Freeman Plan," analyzed in [7], holds out the prospect of early promotion for very successful recruiters. For recruiting-district management, the district competition system provides recognition for those whose performance exceeds expectations. Both of these incentive mechanisms are discussed below.

THE FREEMAN PLAN

In the Freeman Plan, incentives for individual recruiters are tied to a fixed standard of performance, independent of the relative difficulty of the recruiting market in a particular geographic area. The incentives thus lack the adaptability of competitive compensation schemes that base rewards on relative performance. Research in the economics of incentives reveals that competitively determined rewards may provide better incentives than piece-rate compensation (bounties) or tournaments with a noncompetitive prize structure [8].

Competitive incentives are those where individuals are evaluated relative to their peers, rather than in comparison to a fixed performance standard. This distinction would matter little if all recruiters operated in similar recruiting markets. Because they do not, the relative effectiveness of the two types of incentives will vary. Competitive incentives adapt "automatically" to encourage greater levels of effort in a wide variety of recruiting environments. In addition, planners require no information about recruiting conditions to set effective reward standards. Competitive prize criteria are likely to be effective when variation in production possibilities for different regions (or periods) is large compared to variation in the productivity of recruiters in similar circumstances. Competitive incentives may also improve the attractiveness of a recruiting billet in places (or periods) perceived to have relatively limited opportunities.

Table 8 lists the points awarded to recruiters for enlistments by recruit-quality category in the Freeman Plan. Recruitment of an HSDG in mental group 2 is worth 107 points to the recruiter. The award criteria are based on a 12-month moving average of recruiter productivity. The four awards require the following average Freeman Plan point accumulations per month:

1. Certificate of Commendation: 300 points
2. Navy Achievement Medal: 350 points
3. Voluntary extension of recruiting duty: 400 points
4. Advancement of paygrade: 525 points

Table 8. Freeman plan point awards by recruit characteristics

	Mental group				
	1	2	3U	3L	4
HSDG	116	107	100	90	70
Alternate/non-HSDG	100	90	85	65	-

If the distribution of recruiting ability is similar for recruiters in different regions, then differences in the number of award-winning recruiters reflect differences in the recruiting environment. Similarly, changes in the percentage of award winners over time indicate changes in Navy policy or the difficulty of recruiting.

Tabulation of Freeman Plan award rates by recruiting area and fiscal year illustrate some of this variation in the incidence of awards.¹ The incidences of the four types of Freeman Plan awards are presented in table 9 for fiscal years 1980 through 1984. Roughly 44 percent of all recruiters with at least ten productive months qualified for some award in FY 1980 and FY 1982. By contrast, no more than 30 percent of recruiters earned enough points to qualify for an award in the three other years. There were extremes in performance: 54 percent of recruiters achieved the minimum award standard in area 4 in FY 1982, while only 22 percent performed at that level in area 7 in FY 1984. Overall, the incidence of qualification for the top two award categories is about 10 percent in the "good" years (FY 1980 and FY 1982) and about 5 percent in the other years. In addition, there are persistent differences between areas. Over the entire period, 31 percent of area 7 recruiters qualified for some award compared to 39 percent of area 4 recruiters.

An Alternative Award Criterion

If the unobserved ability distribution of recruiters does not vary much over time or across areas, the inequality of rewards documented in table 9 reflects unequal opportunity. Equal opportunity forms the basis of fairness in most competitions. An alternative reward criterion based on outstanding performance relative to recruiters in similar circumstances (equal opportunity) would enhance the fairness of the reward system and probably provide more effective incentives. One of the easiest ways to control for the difficulty of the recruiting market is to geographically segment the peer group to which individuals are compared. A geographically

1. As with all tabulations of Freeman Plan awards in this paper, these are not the official counts of award winners. It is not possible to reproduce the method used to determine the actual awards from the available PRIDE [9] data. The tabled values are approximations that provide consistent information on differences in award propensities over time and across areas. Reference [7] contains a more complete description of the tabulation method.

Table 9. Freeman plan point award levels for recruiters^a

Area	1980 point range ^b					1981 point range ^b				
	300-349	350-399	400-524	> 524	Total	300-349	350-399	400-524	> 524	Total
1	90 (23.1)	44 (11.3)	38 (9.8)	2 (0.5)	174 (44.7)	74 (18.9)	29 (7.4)	25 (6.4)	2 (0.5)	130 (33.2)
3	57 (19.7)	39 (13.4)	27 (9.3)	5 (1.7)	128 (44.1)	65 (20.2)	24 (7.5)	20 (6.2)	0 (0.0)	109 (33.9)
4	86 (23.4)	47 (12.8)	33 (9.0)	6 (1.6)	172 (46.8)	72 (19.3)	27 (7.2)	16 (4.3)	0 (0.0)	115 (30.8)
5	50 (19.1)	32 (12.2)	14 (5.3)	5 (1.9)	101 (38.5)	34 (13.8)	18 (7.3)	11 (4.5)	1 (0.4)	64 (26.0)
7	45 (20.7)	24 (11.1)	15 (6.9)	1 (0.5)	85 (39.2)	31 (15.2)	12 (5.9)	9 (4.4)	1 (0.5)	53 (26.0)
8	58 (17.7)	41 (12.5)	28 (8.5)	5 (1.5)	132 (40.2)	49 (17.0)	21 (7.3)	15 (5.2)	1 (0.3)	86 (29.8)
Total	386 (20.8)	227 (12.2)	155 (8.4)	24 (1.3)	792 (43.4)	325 (17.8)	131 (7.2)	96 (5.3)	5 (0.3)	557 (30.5)

Table 9. (Continued)

Area	1982 point range ^b					1983 point range ^b				
	300-349	350-399	400-524	> 524	Total ^c	300-349	350-399	400-524	> 524	Total
1	88 (22.6)	42 (10.8)	30 (7.7)	2 (0.5)	162 (41.6)	48 (14.4)	27 (8.1)	13 (3.9)	0 (0.0)	88 (26.4)
3	75 (24.4)	32 (10.4)	31 (10.1)	2 (0.7)	140 (45.6)	32 (12.3)	24 (9.2)	8 (3.1)	0 (0.0)	64 (26.6)
4	91 (25.3)	61 (16.9)	33 (9.2)	8 (2.2)	193 (53.6)	47 (15.1)	30 (9.6)	13 (4.2)	1 (0.3)	91 (29.2)
5	48 (21.1)	32 (14.0)	15 (6.6)	0 (0.0)	95 (41.7)	42 (18.1)	16 (6.9)	8 (3.4)	0 (0.0)	66 (28.4)
7	46 (20.5)	24 (10.7)	17 (7.6)	0 (0.0)	87 (38.8)	31 (17.7)	8 (4.6)	4 (2.3)	0 (0.0)	43 (24.6)
8	61 (21.7)	33 (11.7)	25 (8.9)	3 (1.1)	122 (43.4)	47 (17.9)	24 (9.1)	12 (4.6)	0 (0.0)	83 (31.6)
Total	409 (22.8)	224 (12.5)	151 (8.4)	15 (0.8)	799 (44.6)	247 (15.7)	129 (8.2)	58 (3.7)	1 (0.1)	435 (27.6)

Table 9. (Continued)

Area	1984 point range ^b					Weighted average (all years) point range ^b				
	300-349	350-399	400-524	> 524	Total	300-349	350-399	400-524	> 524	Total
1	57 (17.4)	14 (4.3)	14 (4.3)	1 (0.3)	86 (26.3)	357 (19.5)	156 (8.5)	120 (6.6)	7 (0.4)	640 (34.9)
3	50 (16.2)	20 (6.5)	14 (4.5)	2 (0.6)	86 (27.8)	301 (20.2)	148 (10.0)	100 (6.7)	9 (0.6)	558 (37.5)
4	78 (23.1)	23 (6.8)	15 (4.4)	0 (0.0)	116 (33.3)	374 (21.4)	188 (10.7)	110 (6.3)	15 (0.8)	687 (38.2)
5	48 (21.3)	14 (6.2)	5 (2.2)	0 (0.0)	67 (30.1)	222 (18.6)	112 (9.4)	53 (4.4)	6 (0.5)	393 (32.9)
7	27 (14.4)	9 (4.8)	5 (2.7)	0 (0.0)	41 (21.9)	180 (17.8)	77 (7.7)	50 (5.0)	2 (0.2)	309 (30.7)
8	66 (25.0)	25 (9.5)	12 (4.5)	2 (0.8)	105 (39.8)	281 (19.7)	144 (10.1)	91 (6.4)	11 (0.8)	527 (37.0)
Total	376 (19.7)	105 (6.4)	65 (3.9)	5 (0.3)	501 (30.3)	1,715 (19.7)	825 (9.5)	524 (6.0)	50 (0.6)	3,114 (35.8)

a. For recruiters with at least ten productive months during the fiscal year.

b. Numbers in parentheses indicate percents.

segmented, competitive award system could be implemented by specifying that the top "X" percent of recruiters in some geographic market should receive a certain type of award.

The resulting distribution of awards would be consistent with a greater degree of equality of opportunity and equality of outcome. The absolute performance level required to achieve an award varies in response to recruiting conditions. Recruiters in relatively good recruiting markets would find that greater production would be required to achieve an award. Overall production would tend to increase with competitive incentives. But, because production potential varies by area, this greater production does not necessarily correspond to greater effort in better recruiting markets. A competitive reward system also encourages effort in both good and bad recruiting environments. Those who would be discouraged from recruiting by too easy or too difficult reward standards find that the standards fluctuate in response to market conditions and the performance of their peers. Recruiters are rewarded according to their ability and effort relative to other recruiters in similar circumstances.

There are, however, several potential drawbacks associated with competitive incentives. They include the following:

- Recruiters may collude to reduce the overall level of effort and production because they are judged relative only to each other. They may also engage in destructive competition.
- If more recruiters "know" that they cannot win an award under such a system, they will be less motivated and less productive than otherwise.
- There may be as much variation in recruiting opportunities within the geographic area as between areas.

It is not possible to quantitatively evaluate these possibilities because the Freeman Plan award standards have not been changed. Some qualitative observations can be made, however. First, the likelihood of collusion or sabotage among recruiters is smaller the greater the number of recruiters involved. This argues for making the geographic areas defining peer groups larger than otherwise. Second, depending on the competitive reward criterion chosen, the median ability recruiter may have less incentive during upswings in the recruiting market than under the fixed standard. However, it would be even more desirable to provide relatively greater incentives during downswings in the recruiting market. Unlike the fixed performance standard, which may have the effect of reducing effort in difficult recruiting markets, competitive incentives are, in theory, neutral with respect to their effect on effort in different recruiting markets.

Recruit Survival and Recruiter Incentives

Differences in the number of Freeman Plan points associated with each type of recruit are intended, in part, to guide recruiter effort toward more desirable recruits. To achieve this

objective, point differences should reflect the relative value to the Navy of the different types of recruits. An important measure of a recruit's value to the Navy is completion of a term of enlistment. In addition, there may be differences in "productivity" (contribution to readiness) between recruit types. There is little quantitative evidence on the relative productivity of different recruit types.¹

Recent reexamination of recruit survival, however, implies a much different pattern of relative recruit value than is implicit in table 8. Table 10 illustrates first-term completion rates for enlistees with four-year obligations. These first-term completion rates can be converted to a scale with the same base as the Freeman Plan points. The scale illustrated in table 11 maintains the proportional differences in table 10, but defines the value of an MG3U HSDG to be 100 points.

Table 10. Contract completion percentages: four-year obligors

	Mental group					
	1	2	3U	3L	4A	4BC
HSDG	75	72	70	69	69	65
GED/non-HSDG	54	47	43	43	47	-

NOTE: All four-year enlistments FY 1978 through FY 1982.

Table 11. Example of survival-based incentive points

	Mental group					
	1	2	3U	3L	4A	4BC
HSDG	107	103	100	99	99	93
GED/non-HSDG	77	67	61	61	67	-

NOTE: MG4 GED/non-HSDGs are generally not recruited but are included for completeness.

1. In addition to [5], there are unpublished data for Navy recruits that examine differences in promotion, demotion, and desertion rates by recruit quality type. The results indicate that survival differences understate the differences in recruit value by type, with the same patterns of differences across recruit types.

The survival-based incentive points in table 11 should, in principle, be adjusted again for relative productivity differences between recruit types. It has not been possible to attempt such an adjustment, but there is unpublished evidence on discipline and promotion rates that the relative value of GED/non-HSDG recruits would decrease with such an adjustment. The same evidence also suggests that the differences between mental groups in table 11 are less biased than the differences by high school certification. In any case, the current distribution of incentive points substantially overstates the relative value of NHSDG recruits. The distortion may have little effect on recruiter behavior if other incentives (or constraints), like the objectives in table 3, take precedence.

DISTRICT COMPETITION

The district competition system encourages and directs the effort of recruiters in conjunction with the allocation of district objectives. Aspects of the district competition include contracts, accessions, recruit quality, special enlistment programs, minorities, and the DEP. These incentives are actively managed by planners at CNRC to encourage specific types of recruiting behavior. The discussion in this section is confined to contract incentives and their relationship with the allocation of contract objectives.

A district's standing in the competition is determined by performance relative to objective. Exceeding district objectives earns points in the competition. The incentives have little or no effect on recruiting in districts that are having difficulty attaining their contract objectives. On the other hand, production in excess of 110 or 115 percent of objective has no value in the district competition. Structuring the competition in this way produces some unintended incentives that can be ameliorated in principle.

The most important of these unintended incentives is that having lower objectives is unambiguously better for district commanders, and district commanders have an incentive to seek lower goals, other things being equal. For this reason, it may be more difficult to allocate changes in market shares associated with shifts in regional economies.

A method for reducing this undesirable incentive would be to supplement the market-share allocations with a process in which area commanders participate in adjusting these goals [10]. Commanders who expect to be able to exceed their proposed goal would be given incentives to increase their goals. To be effective, the reward for increasing the objective must be larger than that for exceeding the objective. On the other hand, both incentives should be smaller than the penalty for not achieving goal.

Such voluntary goal adjustment, perhaps within limits set by CNRC, is compatible with having incentives. Districts desiring lower goals would seek them only to avoid the relatively strong penalty associated with underachievement. Such a recognition and reward system may not need to be formalized to be effective. In the process of such voluntary goal adjustment, CNRC would obtain better information on district or area production potential. However, if district commanders fear that exceptional production, or voluntary goal increases, will bring future penalties in the form of larger goals, they may be reluctant to reveal such a capacity.

GEOGRAPHIC VARIATION IN RECRUITER PRODUCTIVITY

If there are significant and systematic differences in recruiting performance by region, then the efficiency of the enlisted recruiting force can be improved by geographic reallocation of recruiters. One of the research efforts [11] in this study evaluated the potential benefits of changing the geographic distribution of recruiters. Shifting recruiters from less productive regions to more productive ones increases the quality and quantity of enlistments without increasing the number of recruiters. The enlistments foregone in the less productive districts are more than compensated for in the more productive districts. The net gain per recruiter shifted should approximate the difference in average enlistments per recruiter between the regions.

The variation in recruiter productivity across districts from FY 1984 through FY 1986 is documented in figures 4 through 7. Productivity is measured by average annual enlistments of A-cell and CU-cell recruits per recruiter.¹ Comparing the figures, the most remarkable change is the increased productivity of recruiters in area 7 in FY 1986. This corresponds with the shift of market share toward area 7 in 1986. Though districts in area 5 also had a larger market share in FY 1986, average productivity in those districts did not change significantly. The decline over time in recruiter productivity in area 1 is also evident, along with a sharp drop in average productivity in area 4 in FY 1986. Data recently obtained from CNRC shows that area 7 districts continue to improve in FY 1987.



Figure 4. Contracts per recruiter: FY 1984-FY 1986

1. Average enlistments of other recruits are relatively constant across districts due to the limited extent to which the Navy will accept such recruits.

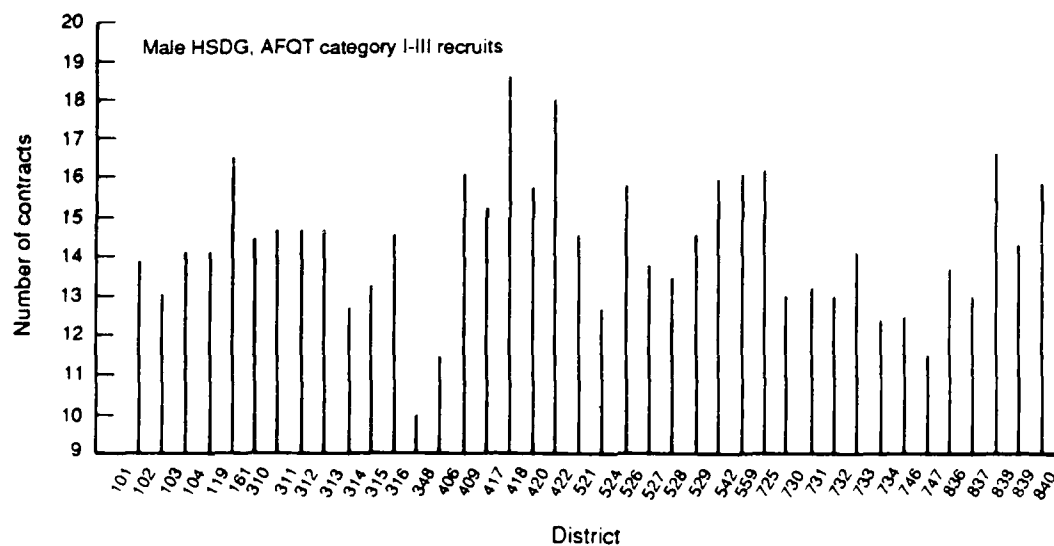


Figure 5. Contracts per recruiter: FY 1984

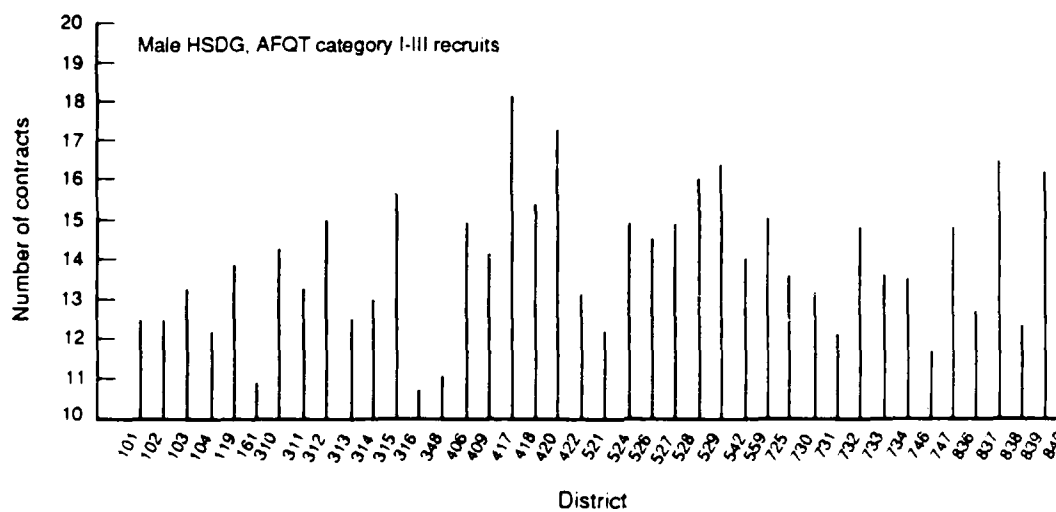


Figure 6. Contracts per recruiter: FY 1985

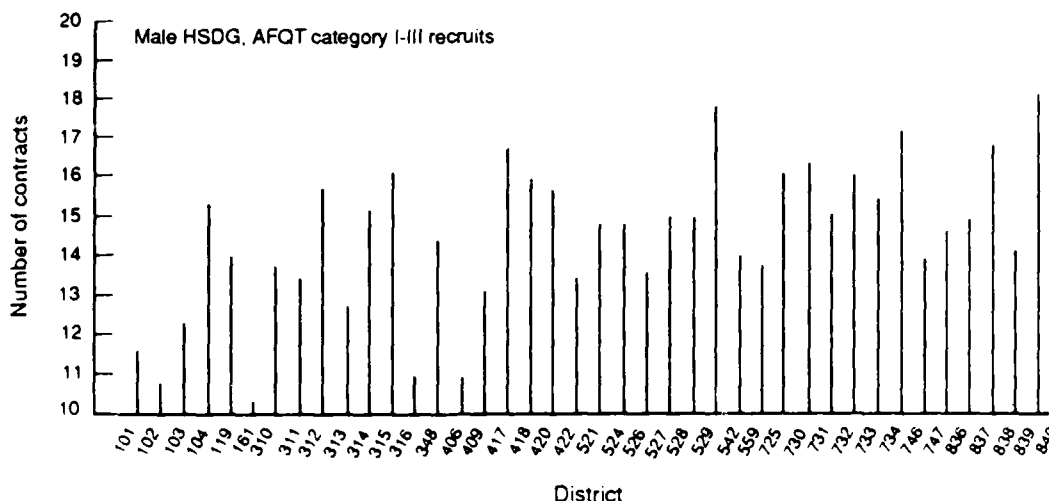


Figure 7. Contracts per recruiter: FY 1986

POTENTIAL BENEFITS OF RECRUITER DISTRIBUTION

The geographic variation in recruiter productivity can be exploited to improve the efficiency of the recruiting force by geographic redistribution of existing recruiters. The general principle for maximizing the production of recruiters with different regional productivities is to shift recruiters among districts until the additional (or marginal) product associated with adding a recruiter to each district is the same for all districts. Because this may be considered infeasible or excessively costly, complete implementation of the principle is not evaluated. Instead, the benefits of shifting a small number of recruiters from the least productive districts to the most productive districts are estimated.

To estimate the potential benefits of recruiter reallocations, it is necessary to determine how the average product of each recruiter in a district changes as more recruiters are added to the district, other things being equal. It is expected that average production of existing recruiters should eventually fall as more recruiters are added to a fixed population base. To estimate the magnitude of the change in average recruiter production resulting from shifting recruiters, average production per recruiter was regressed on population per recruiter and other labor market indicators. The estimated decline in average product per recruiter with increasing recruiter intensity is very small. Adding 25 recruiters to the average size district is estimated to reduce average production by one-half recruit per recruiter per year. The estimated change is small relative to observed differences in average production across districts.

Table 12 shows the estimated increase in production of A and CU contracts due to shifting approximately 140 to 200 recruiters between districts. In each case, 20 percent of the recruiters in the ten least-productive districts are shifted to the most productive districts. The top panel of the table is based on "onboard" recruiters as opposed to "production" recruiters. Onboard recruiters include production, supervisory, and other recruiters. Among these categories, only production recruiters are primarily engaged in prospecting for and enlisting recruits. Supervisory recruiters write some enlistment contracts and supervise the activities of production recruiters. The small number of other recruiters are engaged in community relations, DEP management, and similar activities. They do not generally write enlistment contracts. Using onboard recruiters probably understates the change in contracts associated with the hypothetical recruiter redistributions, and vice versa for production recruiters.

Table 12. Estimated benefits of the hypothetical shifts of recruiters

Measure of productivity	Period (fiscal years)	Recruiters shifted	Annual additional A- & CU-cell contracts	Annual equivalent recruiter man-years	Annual saving (\$M/year)
Onboard recruiters					
Actual	84-86	169	643	45	1.6
	86	206	943	64	2.2
Predicted	84-86	158	375	26	0.9
	86	195	477	33	1.1
Production recruiters					
Actual	84-86	172	958	51	1.8
	86	167	1,269	66	2.3
Predicted	84-86	139	564	30	1.0
	86	155	791	41	1.4

NOTE: Recruiters are valued at \$35,000 per man-year.

Because the ordinary least-squares regression of average production on labor market indicators and expected production explained only about one-third to one-half the variation in productivity, the predicted average products for recruiters in different districts are typically much closer to the mean than observed production. The benefits of redistribution are proportional to the range of average products. Thus, the estimates of the benefits of redistribution based on predicted performance are much smaller than those based on actual performance. Actual

performance differentials provide a better gauge of the potential productivity improvement, despite the fact that the magnitude of the differences may not be well predicted. This is because, with some exceptions in area 7 (the southwest), there is substantial inertia in the geographic pattern of productivity differences. Table 13 shows the districts affected by the hypothetical redistributions evaluated in table 12. Table 14 provides the name of the city where the District Command is located. For both measures of recruiters, six of the ten districts with recruiter reductions associated with actual performance over the FY 1984 to FY 1986 period are the same as when only FY 1986 performance is evaluated. In each case, seven of the nine districts with additional recruiters are the same. Figure 8 illustrates the affected districts for the hypothetical shifts based on actual production of onboard recruiters in FY 1986.

The one important difference is the improved performance of districts in area 7 (the southwest) in FY 1986. This increase was predictable for several of these districts as indicated in columns (4) and (8) of table 13. To the extent that future shifts in recruiter productivity are also predictable, planners should be less concerned about reallocating recruiters into markets that subsequently decline. Because the differences in productivity tend to persist, it is estimated that the reallocations associated with actual performance during FY 1984 to FY 1986 would have led to an estimated 620 annual additional contracts (versus 643) using FY 1986 actual performance measures. The estimated gains are relatively insensitive to the regional shift in recruiting performance. A core of recruiter redistributions remains unaffected by the changes in regional economies during this period.

Figure 9 shows the shifts in recruiters and contracts by area. Data are based on 1986 productivity figures for onboard recruiters. At the area level, the shift of recruiters and market shares (or contracts) is out of areas 1, 3, and 4 and to areas 5, 7, and 8. Areas 3 and 7 have market shares exceeding population shares.¹ Area 1 and, to a lesser extent, area 5 have market shares less than the population shares. Efficiency-enhancing recruiter redistribution widens the existing gap between population and recruiter distributions in areas 1 and 7 and reduces the gap in the other areas.

Potential Problems With Recruiter Reallocation

The improved productivity cannot be obtained without incurring some additional administrative and other overhead costs. It has not been possible to quantify the costs of reallocating 150 to 200 recruiters, as in the examples. It is difficult to imagine, however, that a small shift of this sort would entail an expenditure as great as the estimated benefits. In the absence of a detailed analysis of the costs of reallocating recruiters, some suggestions for reducing the impact are offered.

1. The male HSDG MG 1-3 population is distributed across the recruiting areas as follows: area 1—18.2 percent; area 3—13.7 percent; area 4—15.8 percent; area 5—20.0 percent; area 7—14.2 percent; and area 8—18.1 percent.

Table 13. Districts affected by hypothetical recruiter reallocation

Measure of productivity of onboard recruiters				Measure of productivity of production recruiters			
Actual		Predicted		Actual		Predicted	
1984-86	1986	1984-86	1986	1984-86	1986	1984-86	1986
Reductions							
316	161	316	316	316	161	316	101
161	102	313	313	102	102	313	313
102	406	730	101	161	406	101	316
348	316	731	409	101	101	102	836
746	101	101	315	313	316	731	102
313	103	746	348	103	313	310	310
101	313	725	102	521	103	161	119
521	409	315	312	104	119	836	409
103	422	310	311	836	422	733	161
731	311	312	119	838	409	119	731
Increases							
528	420	839	417	730	725	417	732
315	418	837	838	529	417	839	837
840	732	418	746	524	312	837	314
418	315	422	839	315	837	840	746
837	725	417	747	312	529	348	734
839	730	526	521	837	315	526	839
529	417	840	420	839	734	420	420
420	837	420	526	420	839		526
417	734		732	417	730		
	529		734				
	839						

NOTE: The first digit of each district number identifies the area.

First, moving existing recruiters is expensive. Natural attrition and selective replacement, however, should provide enough turnover to implement a small recruiter shift in a relatively short time. Second, recruiting stations should not be abandoned. Instead, a reduction of one recruiter should be considered for the least productive stations with two or more recruiters. In this way, a Navy recruiting presence is maintained in all current markets. The male youth population per recruiter will not be affected much by such small changes. Third, new recruiters should be allocated to the most productive stations (or local areas) within districts. This will tend

to enhance the benefits of reallocation relative to the estimates in table 12. A more important corollary is to encourage district and area commanders to allocate recruiters to sub-markets with a concern for overall productivity.

Table 14. Navy recruiting district command locations

Area	District	Location	Area	District	Location
1 (Northeast)	101	Albany	5 (Midwest)	521	Chicago
	102	Boston		524	St. Louis
	103	Buffalo		526	Louisville
	104	New York		527	Kansas City
	119	Philadelphia		528	Minneapolis
	161	Iselin (NJ)		529	Omaha
3 (Southeast)	310	Montgomery	7 (Southwest)	542	Indianapolis
	311	Columbia		559	Milwaukee
	312	Jacksonville		725	Denver
	313	Atlanta		730	Albuquerque
	314	Nashville		731	Dallas
	315	Raleigh		732	Houston
	316	Richmond		733	Little Rock
	348	Miami		734	New Orleans
4 (North Central)	406	Harrisburg	8 (West)	746	San Antonio
	409	Washington		747	Memphis
	417	Cleveland		836	Los Angeles
	418	Columbus		837	Portland
	420	Pittsburgh		838	San Francisco
	422	Detroit		839	Seattle
				840	San Diego

There will undoubtedly be future shifts in regional recruiting conditions like those observed over the past four years. Such shifts will require periodic reevaluation of recruiter placement about every two years. To be successful, there should be enough flexibility in recruiter manning to execute (and reap the benefits of) the changes in assignment patterns over periods shorter than four years. The methods discussed here and in [11] should be sufficient to identify districts for recruiter reallocation.

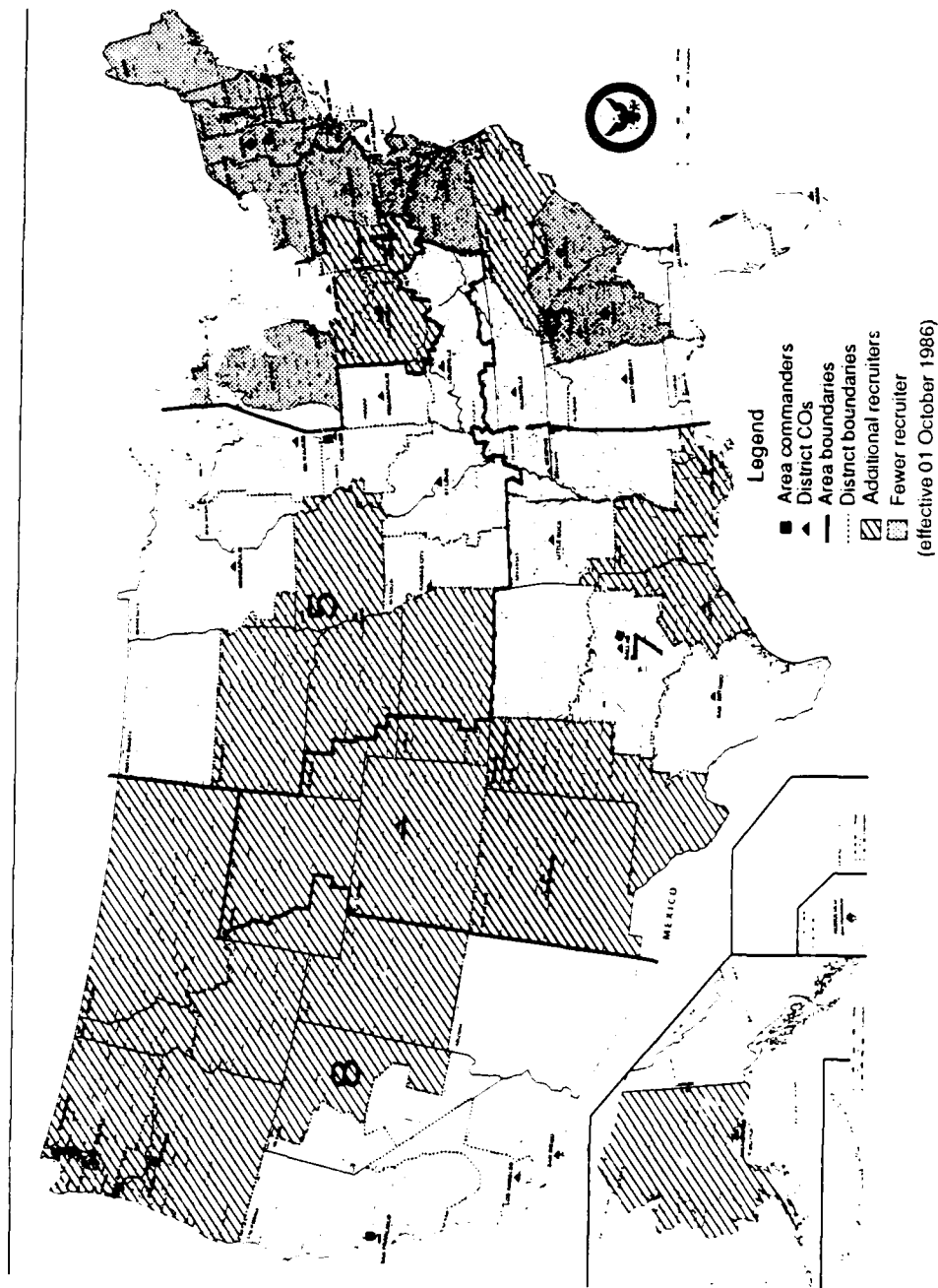
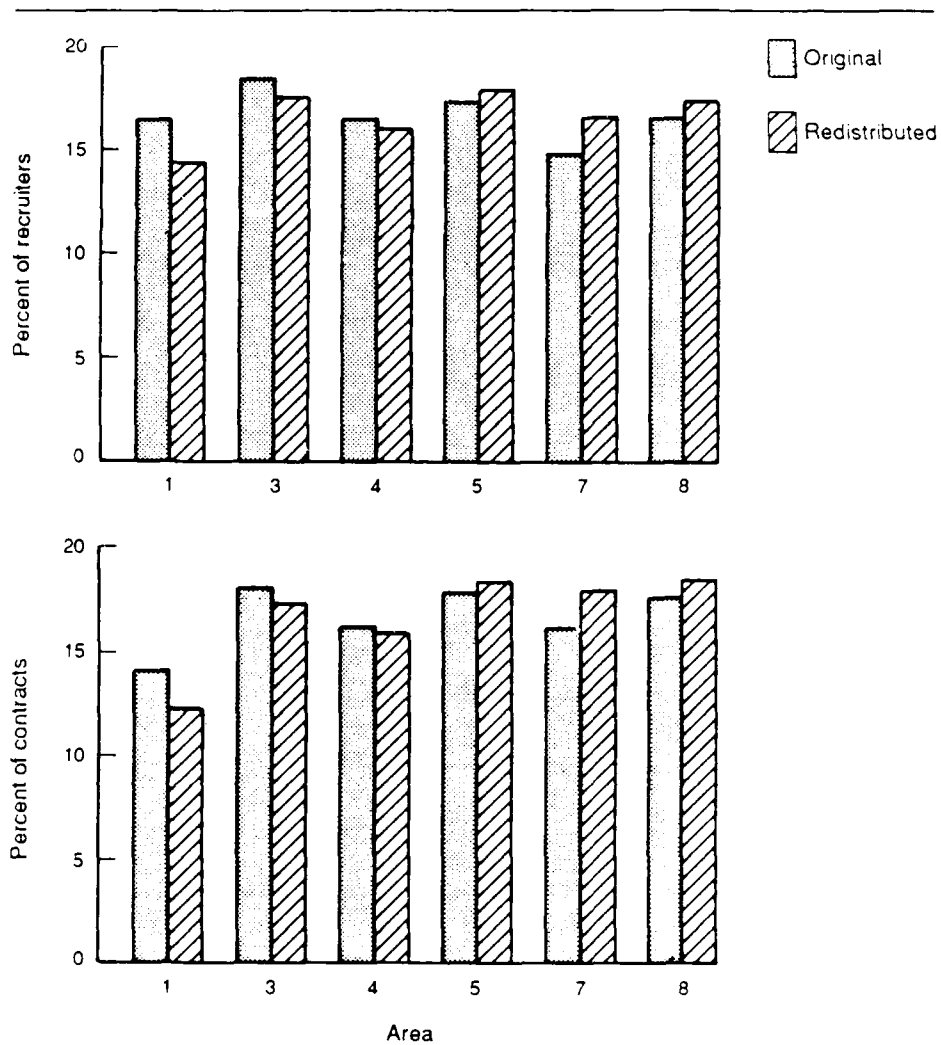


Figure 8. Hypothetical recruiter relocation based on FY 1986 performance



(Recruiters are onboard recruiters. Contracts are male
Non-Prior-Service HSDG AFQT category I-III based on FY 1986 data)

Figure 9. Hypothetical redistribution of recruiters and contracts by area

Relationship to Goaling and Incentives

If Navy recruiting areas or districts are assigned additional recruiters, the objectives should be adjusted correspondingly. The amount of increase or decrease in the objective should depend on the specific district affected and should not reflect the average productivity of recruiters nationwide. This adjustment of objectives is important to the extent that recruiter performance is influenced by, and evaluated relative to, expected performance. Reallocating objectives alone cannot achieve the improved efficiency associated with redistributing recruiters.

Alternatively, one could consider linking the recruiter-allocation process to the district-competition system. District commanders could be encouraged to expand their market share by "bidding" for additional recruiters and promising additional production. Such trades could, in principle, be coordinated by CNRC. Establishment of a uniform price per recruiter to the district commanders, stated as enlistment contracts required per recruiter man-year, would provide incentives for voluntary trades. Such a system, though relatively efficient, is not feasible, however, although its results are approximated in principle by the proposed method for recruiter placement.

IMPLICATIONS FOR RECRUITER MANAGEMENT

This research memorandum has analyzed the fairness and efficiency of recruiter allocation, district objectives, and recruiter incentives. Based on the analysis, several suggestions for improving the management of the enlisted recruiting force have been made. The two most important policy options considered are the following:

- Implementing a flexible procedure to periodically reallocate recruiters across districts using average productivity data should have a high payoff. The procedure could be used to minimize the effect of reducing the recruiting force, or vice versa. A one-time shift of 160 to 200 recruiters from less productive districts to more productive ones would be equivalent to adding 45 to 65 recruiter man-years per year. Alternatively, it is estimated to save \$1.6 to \$2.3 million per year in the recruiter budget. Between 1,900 and 2,900 additional high quality recruits could have been expected from such a reallocation during FY 1984-1986, improving both the quality and quantity of enlistments. Shifting recruiters between districts should be associated with a corresponding reallocation of district objectives that recognizes differences in recruiter productivity between districts.
- Recruiter incentives can be made more equitable and efficient by (1) tying Freeman Plan incentives more closely to recruit survival, (2) making recruiter reward criteria competitive rather than absolute, and (3) giving district commanders incentives to increase their quality and quantity objectives.

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1. The numbers in parentheses are CNA internal control numbers.